REMARKS

Claims 1-21 are pending in the present application. Claims 1, 7, 13, 19, and 20 were amended; and claims 22 and 23 were added. Amendments were made to the claims to more clearly define the present invention. Reconsideration of the claims is respectfully requested.

I. Interview with Examiner Amini, 06.23.03

Applicant respectfully refers Examiner Amini to the telephone interview conducted on June 23, 2003. In that interview, Applicant submitted questions regarding page 10, paragraph 20 of the office action, which states a rejection of claims 8, 11, and 12 under 35 USC 112, first paragraph, as based on a disclosure which is not enabling. The rejection states:

> Antialiasing and gamma correction are critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1129, ... Applicant is claiming a bus system, which is a set of hardware lines (conductors) used for data transfer among the components of a computer system in claim 8. Applicant is claiming the communication unit (NIC) in claim 11, and also is claiming the processor and memory that are located in graphic adapter or controller. Note: Most of graphics adapter are equipped with processor unit and memory chips.

20 In the interview, Applicant stated that the rejection did not seem applicable to claims 8, 11, or 12. On reviewing the rejection, Examiner Amini agreed that the rejection of claims 8, 11, and 12 was not correct. Applicant also noted that several other claims included limitations directed to antialiasing and gamma correction, but which were not rejected under 35 USC 112 first paragraph. Applicant also noted the existence in the specification describing antialiasing and gamma correction.

Examiner instructed Applicant to reference the telephone conference in this response and to note the arguments made therein. Applicant respectfully requests that Examiner telephone Applicant's attorney, Patrick Holmes, at (972) 367-2001 to further

discuss this amendment if Examiner believes such a telephone conference would aid or expedite examination of this application.

II. 35 U.S.C. § 112, First Paragraph

The Examiner has rejected claims 8, 11, and 12 under 35 U.S.C. § 112, first paragraph, as based on a disclosure which is not enabling. This rejection is respectfully traversed. Applicant respectfully refers Examiner Amini to the telephone interview, referenced above.

Therefore, the objection of the specification under 35 U.S.C. § 112, first paragraph is believed overcome.

III. 35 U.S.C. § 102, Anticipation

The examiner has rejected claims 1-7, 13-18 and 19-20 under 35 U.S.C. § 102(e) as being anticipated by Warren et al. This rejection is respectfully traversed.

As per claims 1-7, 13-18 and 19-20, the office action states in part:

> **Claim 1.**
> "A method in a data processing system for antialiasing lines for display, the method comprising: receiving graphics data for display, wherein the graphics data includes primitives defining lines; applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines; and displaying the anitaliased lines", as applicant discloses in the specification on page 2, lines 5-10, a primitive is a graphics element that is used as a building block for creating images, such as a point, a line, a polygon, or text. Warren et al. illustrates in Fig. 9 the pixel data is then sent to the resterization unit 906, where Z-buffering, texturing, and antialiasing functions are performed. And also discloses in abstract that the gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values with one intensity level per pixel value. The method includes partitioning the gamma correction curve table into N segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels. Also see (col. 9, lines 44-65). The geometry unit 902 converts the graphical data from the processor 804 into a screen coordinate system and performs projection ad transformation processes to give depth to a displayed object. The resulting primitives (points, lines, polygons, polyhedra, and the like) supplied by the geometry unit 902 are then provided to the scan conversion unit 904.

ANALYSIS

1. The cited reference does not teach or suggest applying a gamma correction only to primitives defining lines, as claimed.

Claim 1 is reproduced for reference:

> 1. A method in a data processing system for antialiasing lines for display, the method comprising:
>
> receiving graphics data for display, wherein the graphics data includes primitives defining lines;
>
> applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines, wherein the gamma correction is applied only to the primitives defining lines; and
>
> displaying the antialiased lines.

[Emphasis added.]

It is respectfully submitted that the cited reference (Warren et al.) does not teach or suggest applying a gamma correction to the graphics data on a per primitive basis to form the antialiased lines, as claimed. Further, it is respectfully submitted that Warren does not teach the claimed limitations of, "wherein the gamma correction is applied only to the primitives defining lines," as claimed in at least claim 1.

Warren is directed to a system for partitioning a gamma correction table into segments, each segment corresponding to a particular intensity level or range of intensity levels. For example, col. 3, lines 9-26, state:

> The gamma correction curve table includes a specified total number of intensity levels associated with gamma corrected pixel values, with one intensity level per pixel value. The method includes partitioning the gamma correction curve table

into BN segments such that each of the N segments is associated with a set of intensity levels from the specified total number of intensity levels. A plurality of intensity levels is selected for each of the N segments. The intensity levels are preferably selected such that significant banding effects are not visible to the human eye between an adjacent pair of selected intensity levels. The gamma corrected pixel values are stored for each of the N segments such that each of the plurality of selected intensity levels functions as an index to the associated gamma corrected pixel values. Gamma correction is performed on the set of pixel data by accessing a stored pixel value in one of the N segments in response to the pixel data, to generate gamma corrected pixel data.

This passage depicts a gamma correction table with multiple segments, but it does not teach the claimed limitation of, "wherein the gamma correction is applied only to the primitives defining lines," as claimed in at least claim 1. To the contrary, it appears that Warren, like other conventional gamma correction systems, applies gamma correction to all pixel values and not just to those forming lines. In other words, the segmented gamma correction table of Warren applies its correction to all pixels, thus failing to achieve the advantages of the present invention, which include avoiding color intensity dampening that occurs with typical gamma corrections. It also fails to obtain the computational advantages of not applying gamma correction to all pixels.

Examiner cites Warren at FIG. 9 and col. 9, lines 44-65. Col. 10 describes FIG. 9, and is partially reproduced here, at col. 10, lines 44-65:

FIG. 9 illustrates a more detailed block diagram of the graphics subsystem 812 in accordance with one embodiment of the present invention. The object data is processed by graphics subsystem 812 in the following pipelined stages: a geometry unit 902, a scan conversion unit 904, a rasterization unit 906, a frame buffer 908, and a display unit 910. The geometry unit 902 covers the graphical data from the processor 804 and into a screen coordinate system and performs projection and transformation processes to give depth to a displayed object. The resulting primitives (points, lines, polygons, polyhedra, and the like) supplied by the geometry unit 902 are then provided to the scan conversion unit 904. The scan conversion unit 904 generates pixel data based on the received primitives by interpolating straight lines so that each intermediate value need not be individually and separately calculated by the geometry subsystem. The pixel data is then sent to the rasterization unit 906, where Z-buffering, blending, texturing, and antialiasing functions are performed. The resulting pixel values are subsequently stored in the frame buffer 908. The display unit 910 reads the frame buffer 908 directly or via a rasterization unit 906 and transmits the pixel values to the display device 822 for display.

[Warren, col. 10, lines 44-65.]

This passage depicts Warren's graphics subsystem, but fails to disclose or suggest the limitations of claim 1, namely, "wherein the gamma correction is applied only to the primitives defining lines...." This feature is mentioned in the present disclosure, for example, at page 12, lines 1-5:

> The mechanism of the present invention avoids color intensity dampening that occurs with presently available techniques by applying gamma corrections only to the pixels generated for the line by rasterization engine 308.

No teaching or suggestion that gamma correction is only applied to pixels, fragments, or primitives that are part of a line is found in Warren.

Hence, it is respectfully submitted that at least claim 1 is distinguished from the cited reference. Likewise, independent claims 7, 13, 19, and 20 are amended to include limitations for applying gamma correction only to pixels or primitives defining lines. Hence, all independent claims are believed distinguishable from the cited reference, and their allowance is respectfully requested. Likewise, claims 2-6, 8-12, 14-18, and 21 depend from the respective independent claims, and are thereby also believed allowable over the cited references.

Because of the results of the Examiner interview, referenced earlier, it is respectfully submitted that claims 8, 11, and 12 have not been rejected by any prior art reference. In the absence of a rejection for these claims, it is respectfully submitted that claims 8, 11, and 12 are allowable.

Further, new claims 22 and 23 are also believed allowable over the cited references. Claim 22 reads:

> 22. (New) A method in a data processing system for antialiasing lines for display, the method comprising:
>
> generating graphics data for display;

determining whether the graphics data comprises a line;

if the graphics data comprises a line, sending the graphics data to an adapter;

applying a gamma correction to the graphics data to form an antialiased line.

Support for these claim limitations is found in the specification at, for example, page 13, lines 13-19. Claim 22 includes limitations for determining whether the graphics data comprises a line before sending it to the adapter for gamma correction. No such limitation is taught or suggested in Warren. Hence, claim 22 and dependent claim 23 are believed distinguished from the cited references.

IV. Conclusion

It is respectfully urged that the subject application is patentable over the cited references and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: 7.1.03

Respectfully submitted,

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